

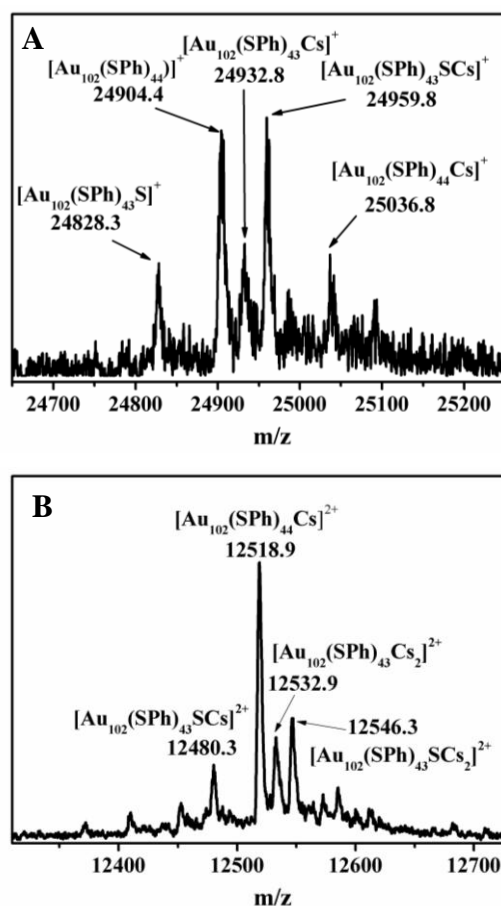
## Supporting Information

### Kinetically Controlled Synthesis of $\text{Au}_{102}(\text{SPh})_{44}$ Nanoclusters and Catalytic Application

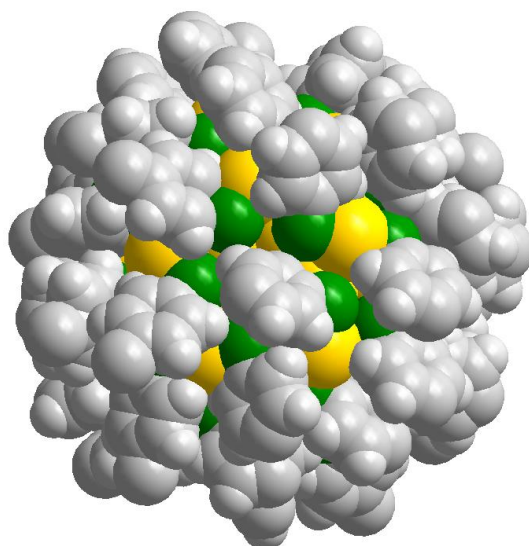
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**Fig. S1.** ESI-MS spectra of the  $\text{Au}_{102}(\text{SPh})_{44}$  nanocluster.



**Fig. S2.** The crystal structure of  $\text{Au}_{102}(\text{SR})_{44}$  nanoclusters, which was drawn in space-filling mode according to  $\text{Au}_{102}(\text{p-MBA})_{44}$ .<sup>1</sup> Color code: Au, yellow; S, green; C, grey; H, white.

**Table S1.** Recovery and Reuse of  $\text{Au}_{102}(\text{SPh})_{44}/\text{TiO}_2$  catalyst for the sulfoxidation. Reaction conditions: 0.1 mmol methyl phenyl sulfide, 0.1 mmol PhIO, 2 mL  $\text{CH}_2\text{Cl}_2$ , 0.5 mg  $\text{Au}_{102}(\text{SPh})_{44}$  supported on 100 mg  $\text{TiO}_2$ , 40 °C, 12 h.

Entry	Cycle	Conversion (%)	Selectivity (%)	
			Sulfoxide	Sulfone
1	1st	90	98	2
2	2nd	91	98	2
3	3rd	88	99	1

## References

1. P. D. Jadzinsky, G. Calero, C. J. Ackerson, D. A. Bushnell and R. D. Kornberg, *Science*, 2007, **318**, 430.